

# Yakima River Adult Steelhead Life History Characteristics

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<sup>2</sup>NOAA Fisheries

<sup>3</sup>Washington Department of Fish and Wildlife

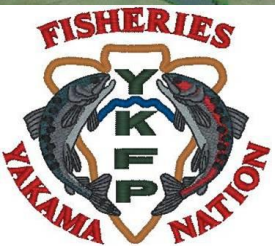


Photo: Zack Mays



# Project acknowledgements:

Alex Conley-YFWRB  
Andy Johnsen-USFWS  
Bill Bosch-YN  
Bill Nicolai- Lighthawk Pilot  
Brady Allen-USGS  
Conan Northwind-YN  
Corky Roberts-USFWS Pilot  
Dale Bambrick-NOAA  
Dave Fast- YN  
Dave Lind-YN  
David Child-DC Consulting  
Gabe Temple-WDFW  
Gary Torretta-USFS  
Germaine Hart-YN  
Jeff Trammell-YN  
Jennifer Scott-WDFW  
Joanne Fernandez-YN  
Joe Blodgett-YN  
Joel Hubble-USBR  
John May- Pilot

Justin Yeager-NOAA  
Kinsey Frick-NOAA  
Mark Nelson-USFWS  
Martin Kimbrel-WDFW Pilot  
Nate Pinkham-YN  
Paul Huffman-YN  
Richard Visser-USBR  
Ryan Deknikker-YN  
Sandra Fife-BPA  
Sara Frederiksen-Wife  
Scott Evans-USGS  
Sean Gross-NOAA  
Shane Keep-YN  
Steve Corbett-NOAA  
Sunny Fiander-YN  
Thomas Arden-USBR  
Tim Ressigue-YN  
Todd Newsome-YN  
Yuki Reiss-YFWRB  
Zack Mays-WDFW



# Yakima River Summer Run Steelhead

## Populations

upper Yakima R.  
Gmean: 151

Naches R.  
Gmean: 840

Toppenish Cr.  
Gmean: 599

Satus Cr.  
Gmean: 660

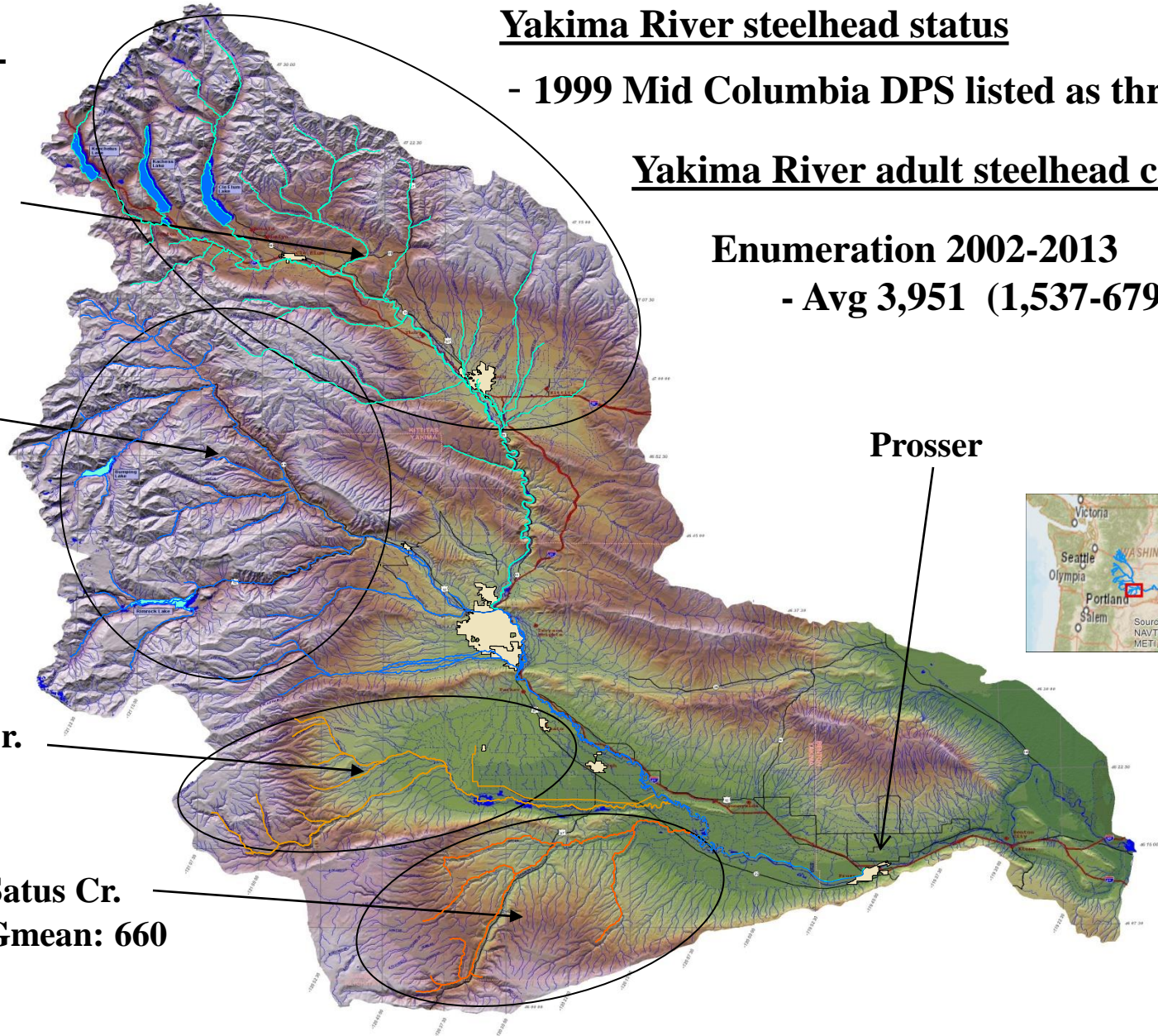
## Yakima River steelhead status

- 1999 Mid Columbia DPS listed as threatened

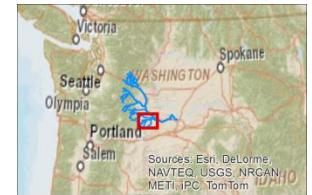
## Yakima River adult steelhead counts

Enumeration 2002-2013

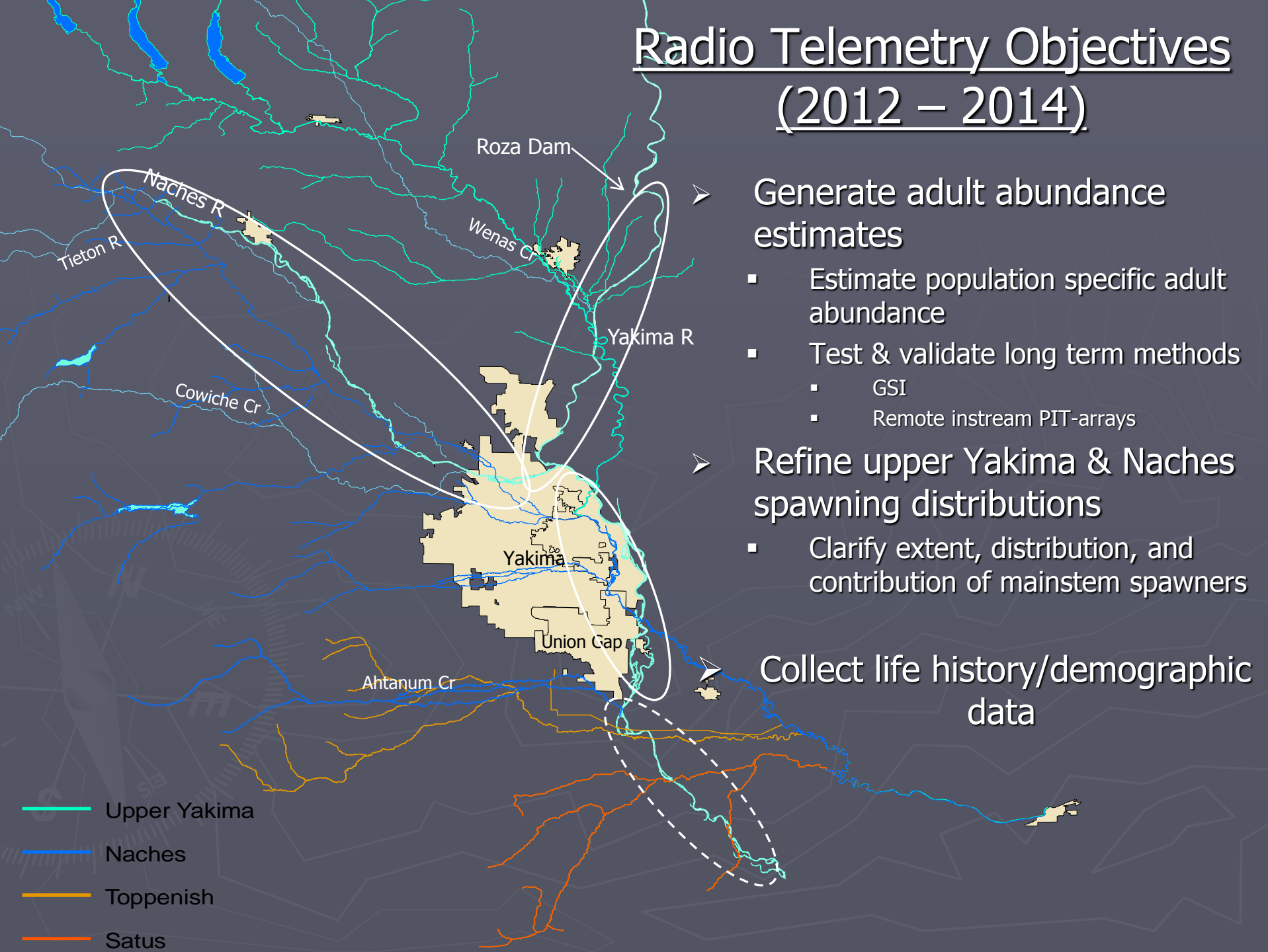
- Avg 3,951 (1,537-6796)



Prosser

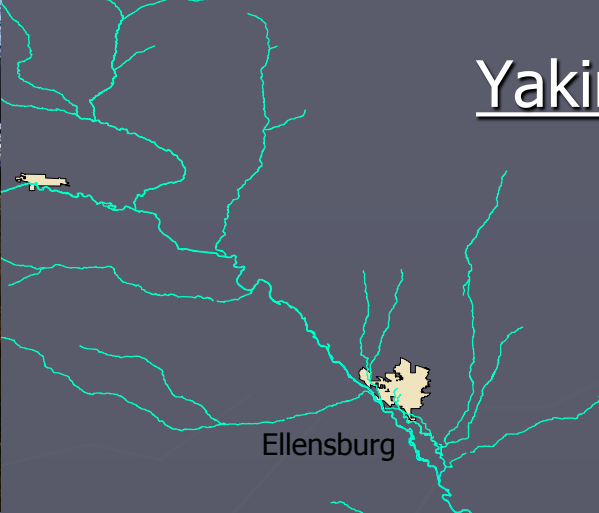


# Radio Telemetry Objectives (2012 – 2014)



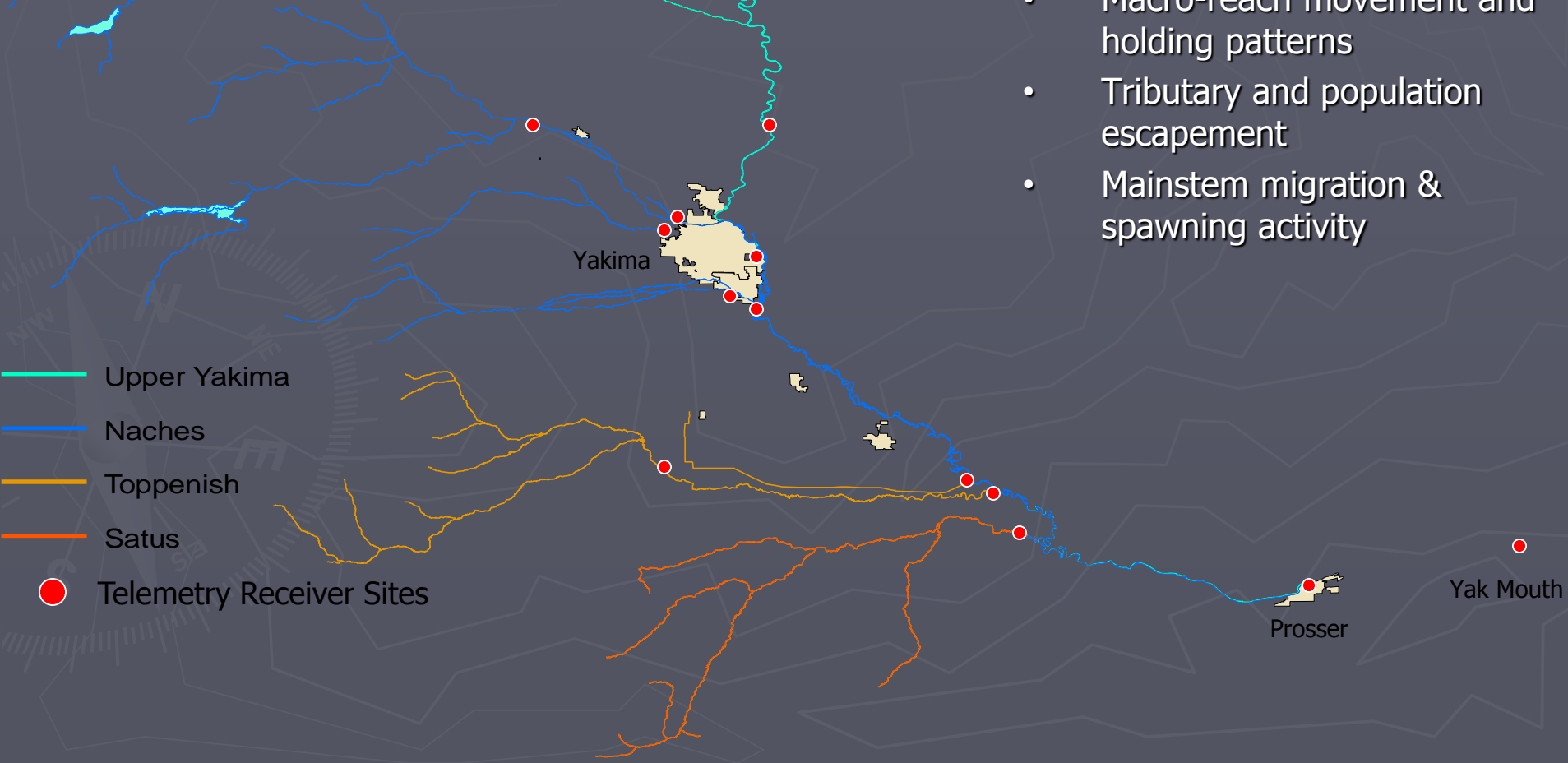


# Yakima River Telemetry Study: Detection Methods



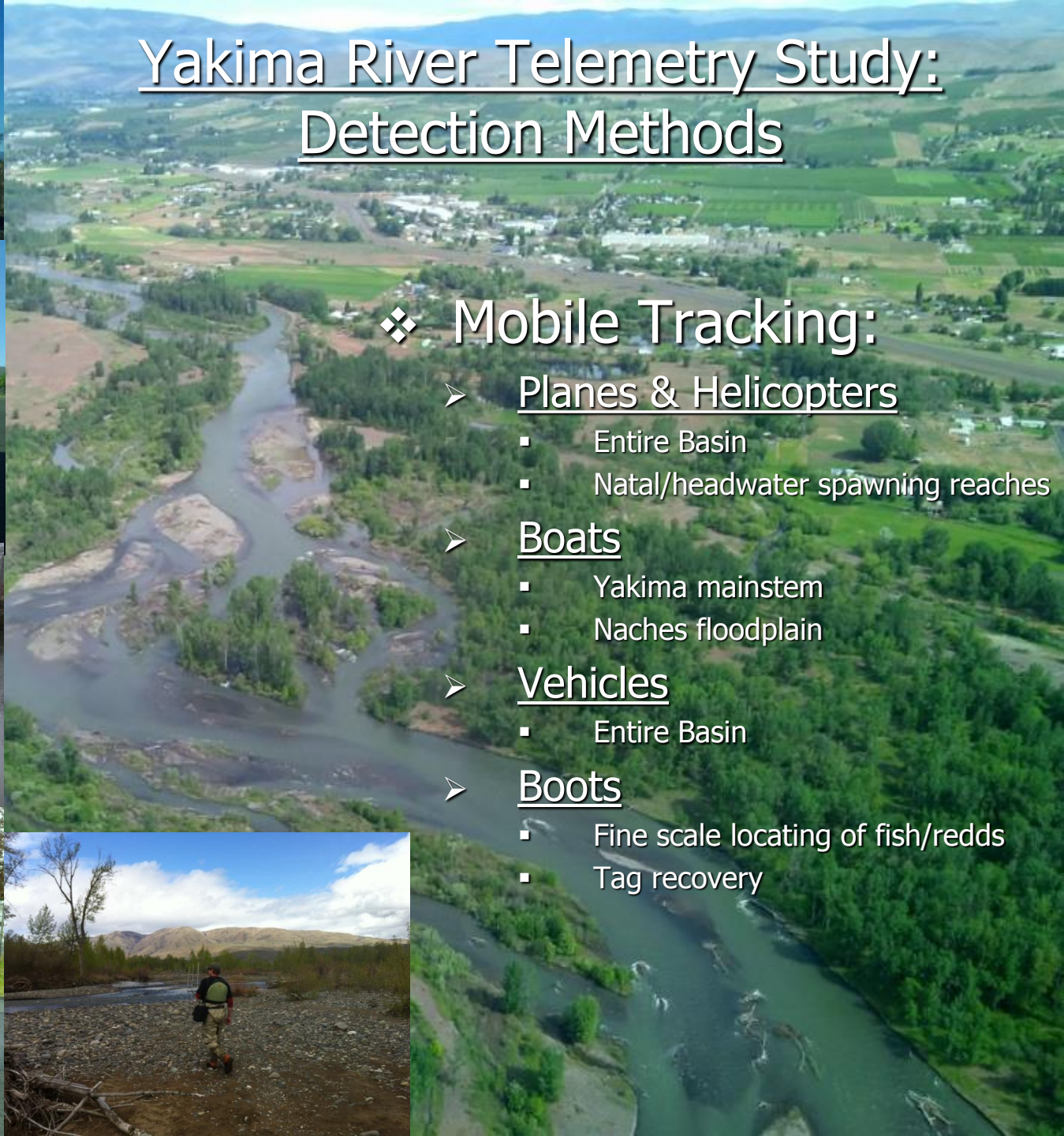
## Fixed site receivers:

- Placed for monitoring:
  - Macro-reach movement and holding patterns
  - Tributary and population escapement
  - Mainstem migration & spawning activity





# Yakima River Telemetry Study: Detection Methods



## ❖ Mobile Tracking:

### ➤ Planes & Helicopters

- Entire Basin
- Natal/headwater spawning reaches

### ➤ Boats

- Yakima mainstem
- Naches floodplain

### ➤ Vehicles

- Entire Basin

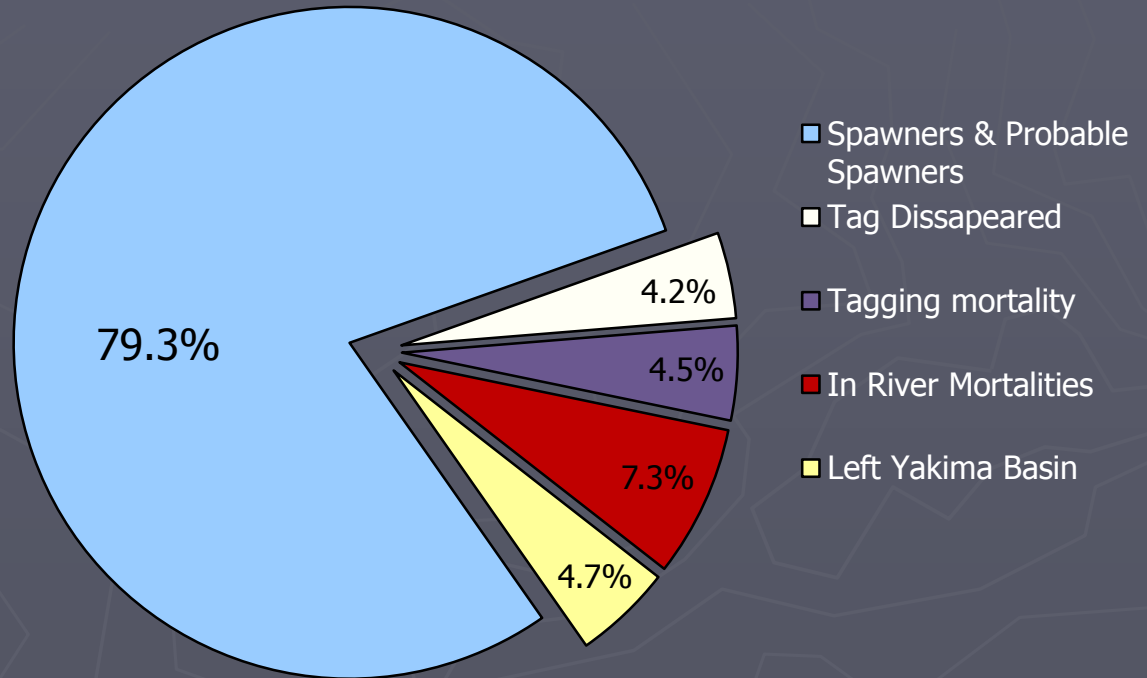
### ➤ Boots

- Fine scale locating of fish/redds
- Tag recovery



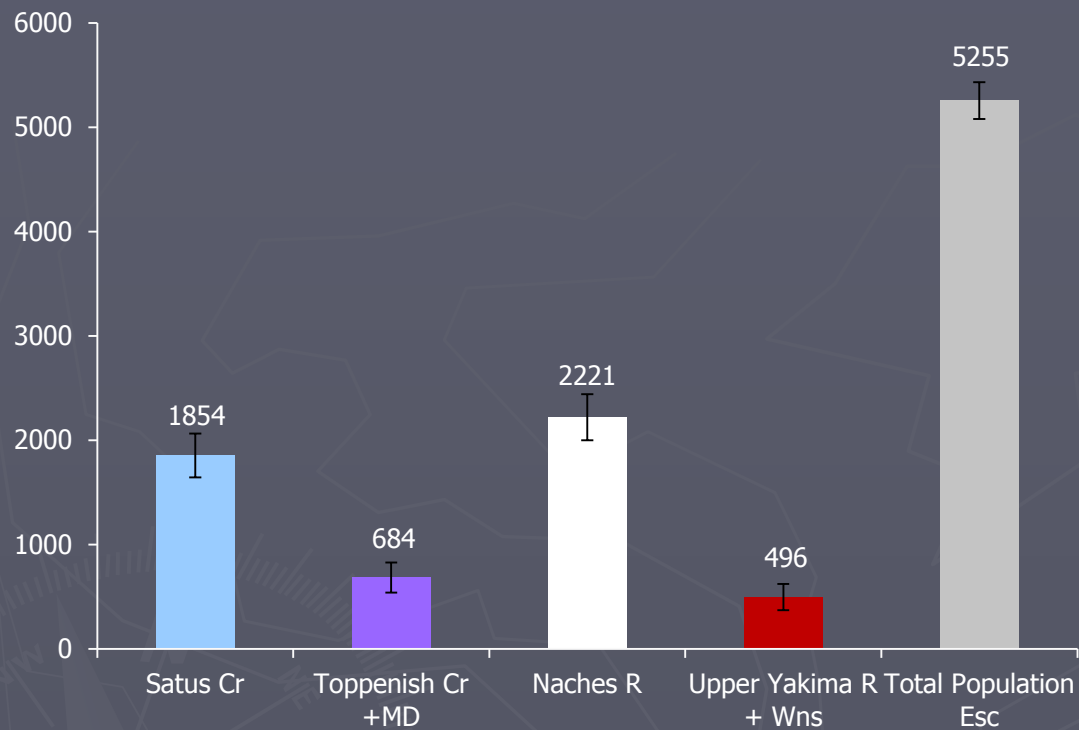


# Fate of Radio Tagged Steelhead (N=507)

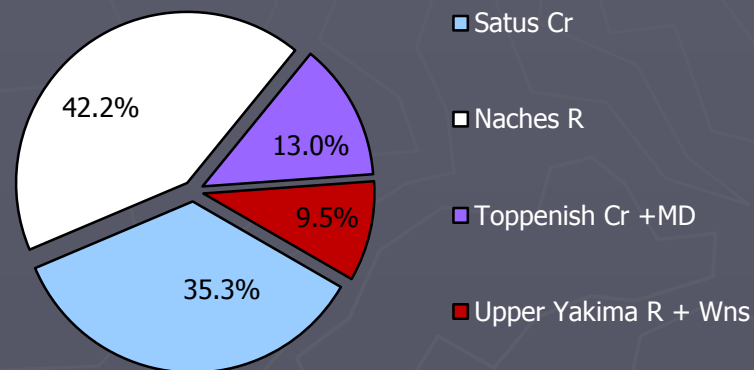




# Population Estimates: Expanded w/ TR +TM



% of Total Spawners by Population



Population	Abundance	CI ( $\alpha = .10$ )
Satus Cr	1854	+/- 211
Toppenish Cr +MD	684	+/- 144
Naches R	2221	+/- 221
Upper Yakima R + Wns	496	+/- 125
Total Population Esc	5255	+/- 176



# Run Size and Distribution (2011-12)

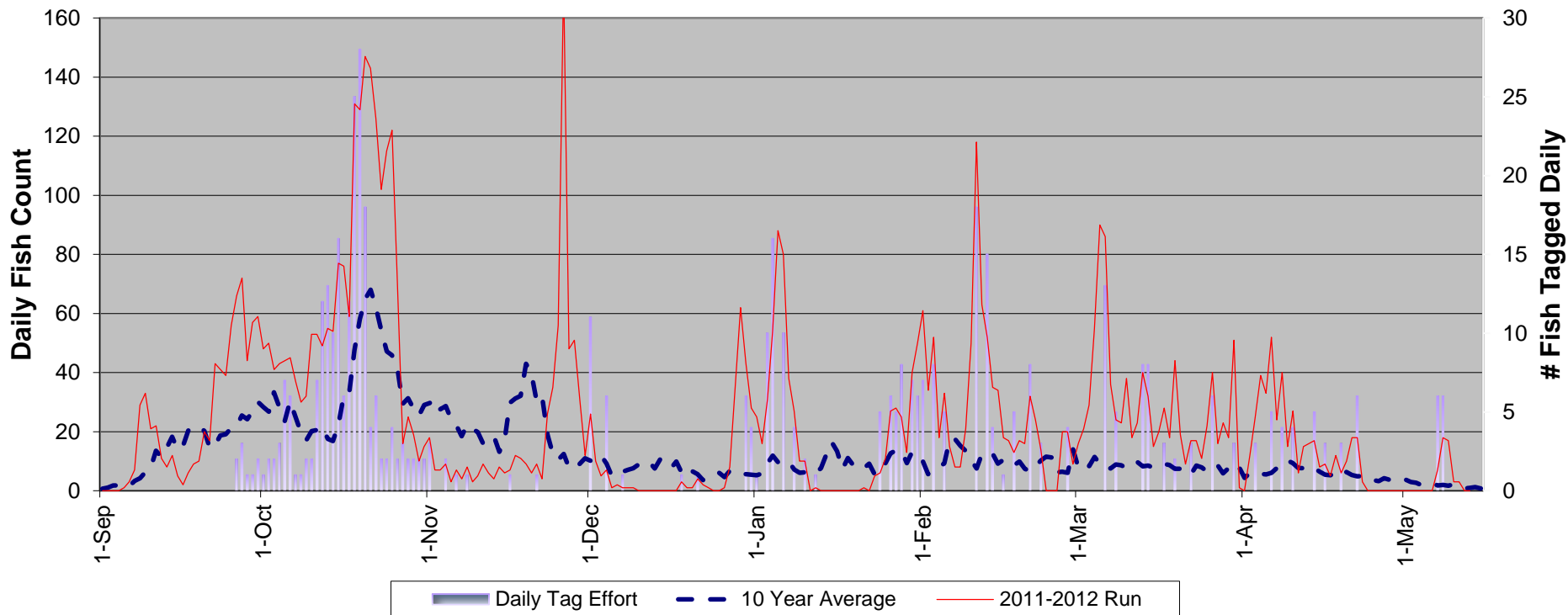
## Prosser statistics (rkm 75.6)

- 6359 total steelhead
  - 6208 wild (97.6%)
  - 151 hatchery (2.4%)
    - ▶ 66.5% F
    - ▶ 33.5% M

## Tagging statistics (715 Sampled)

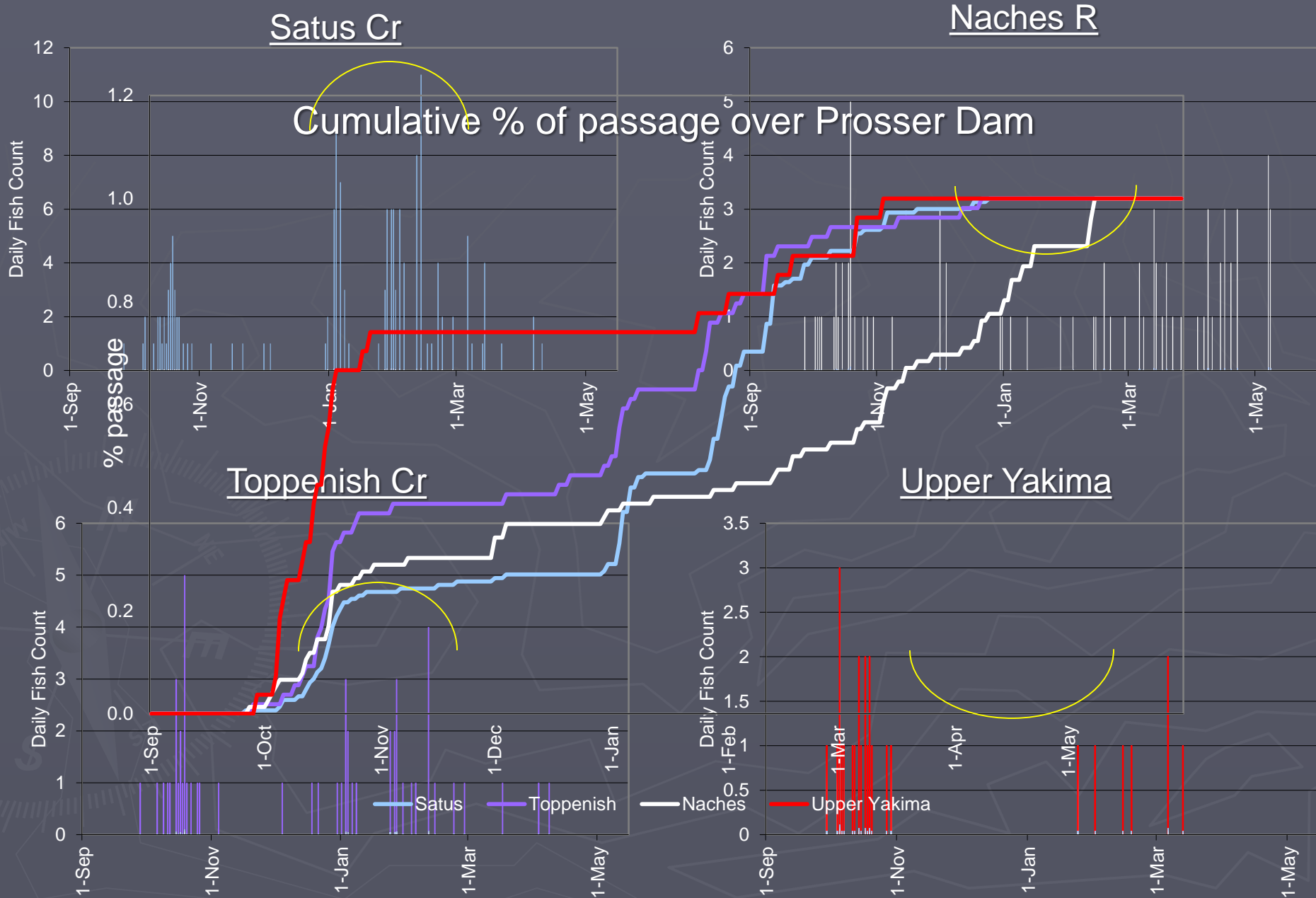
- 507 radio tagged
  - 493 wild (97.2%)
  - 14 hatchery (2.8%)
    - ▶ 65.8% F
    - ▶ 34.2% M

**Yakima Steelhead Run-Timing at Prosser Dam: Recent 10-Year Average vs 2011-12 Run**



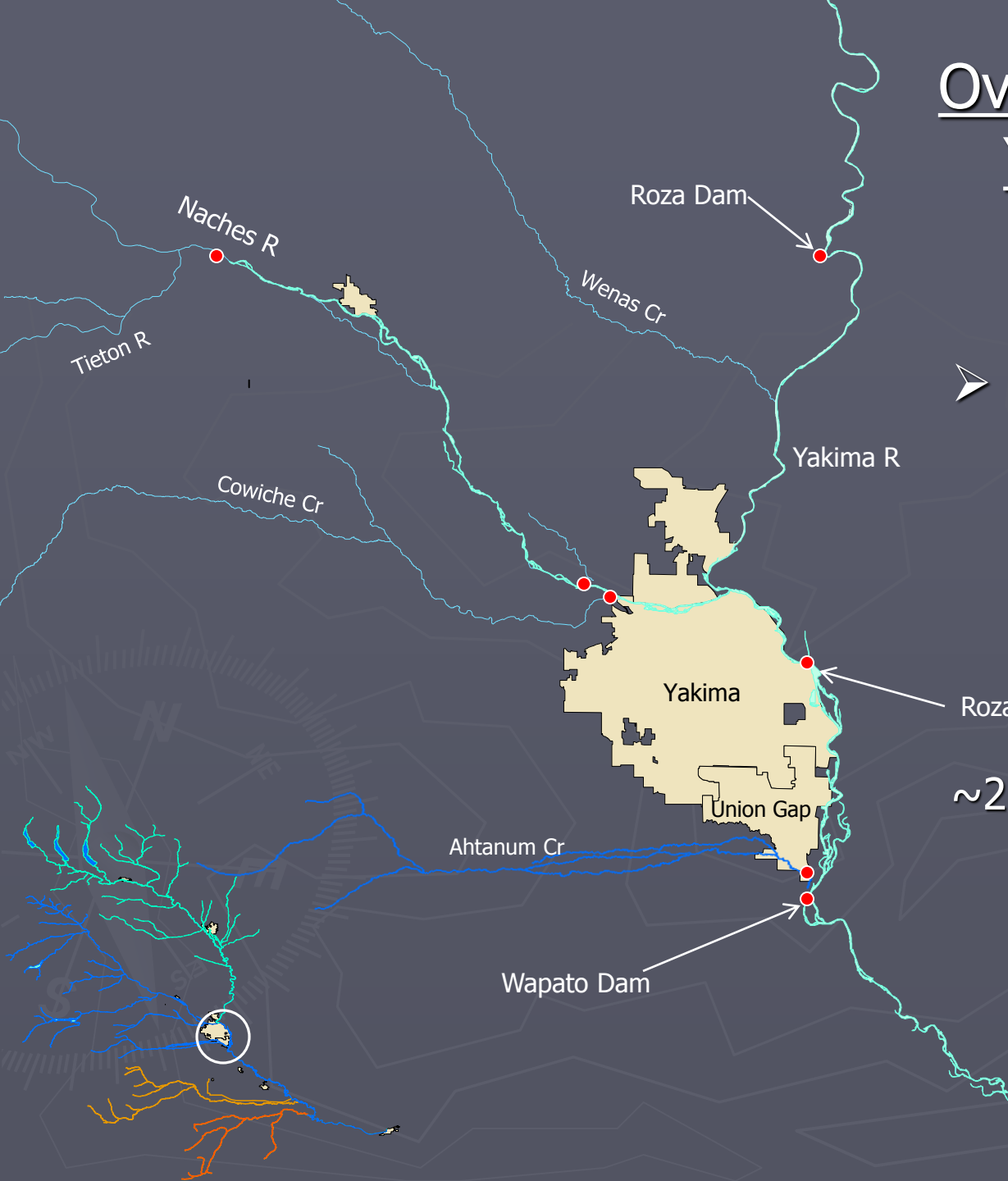


# Population Run-timing: Prosser Dam



# Over-wintering: Upper Yakima Mainstem

(11/01-02/01)



## ➤ Mid-Basin detections

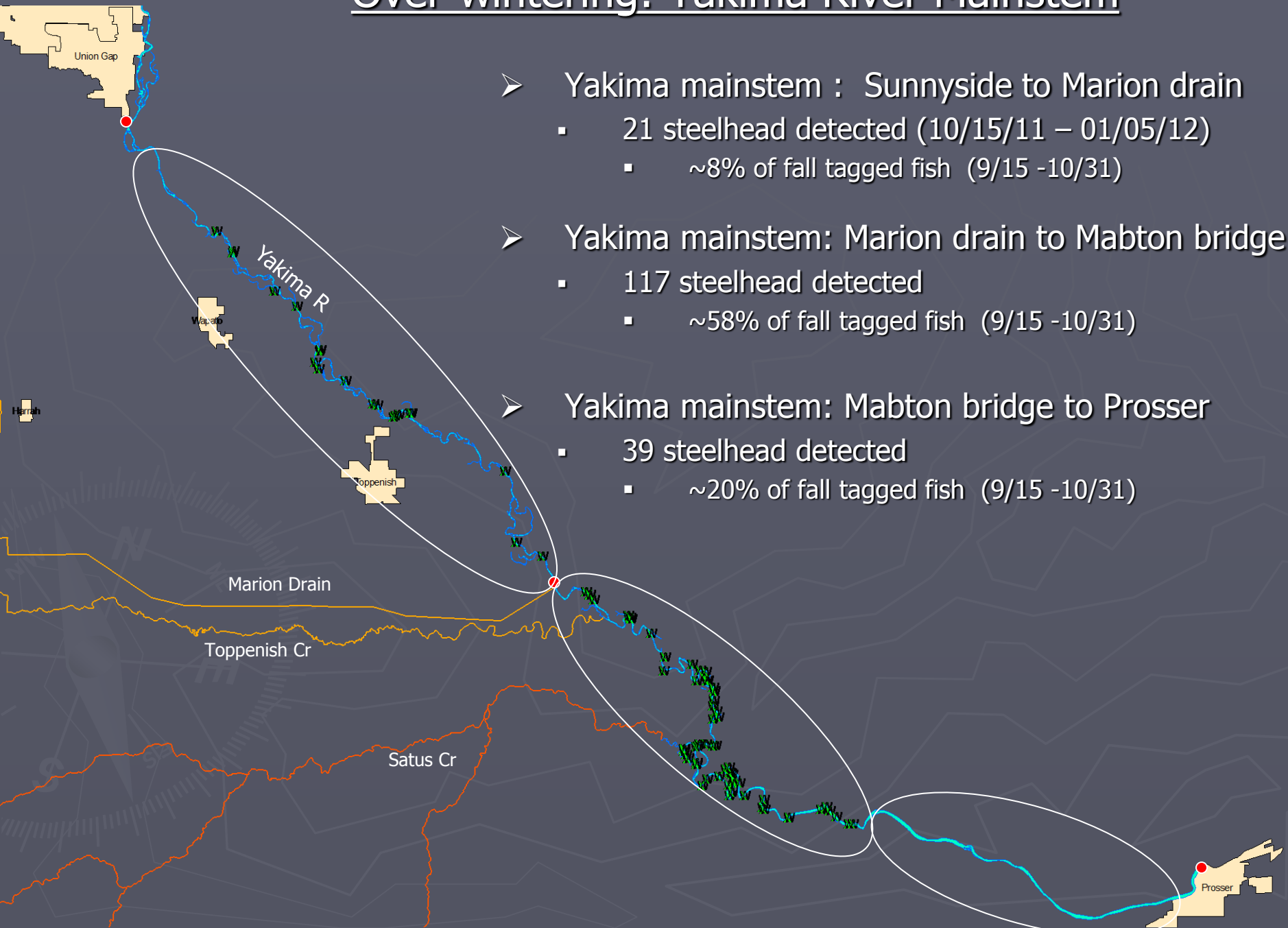
- 5 steelhead detected above Wapato Dam
  - 3 (5) detected at Roza outfall
    - 1 (5) detected at Roza Dam

~2.5% of Radio-tagged steelhead  
(9/15 - 10/31)

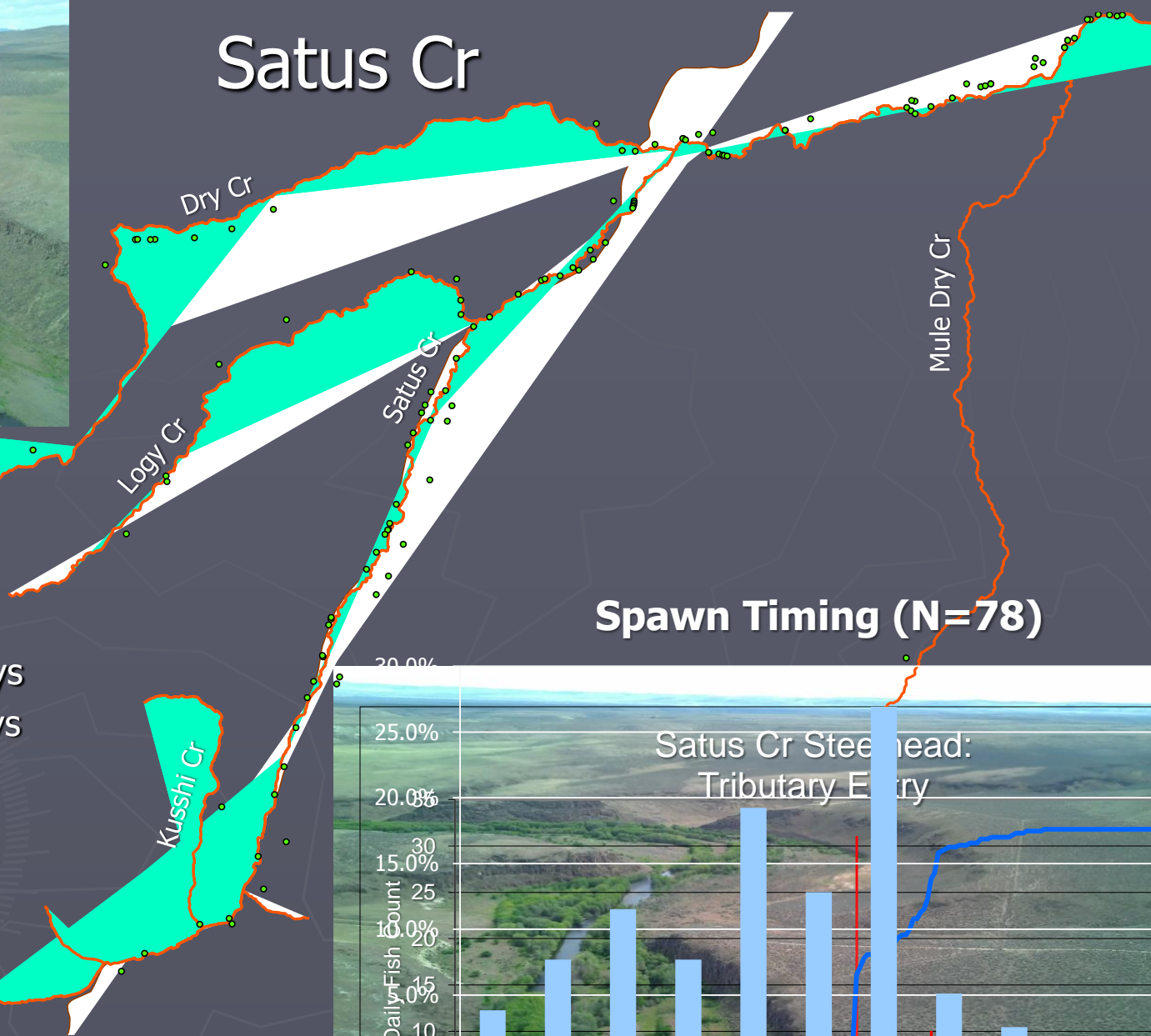
- 1 Naches
- 4 upper Yakima



# Over-wintering: Yakima River Mainstem

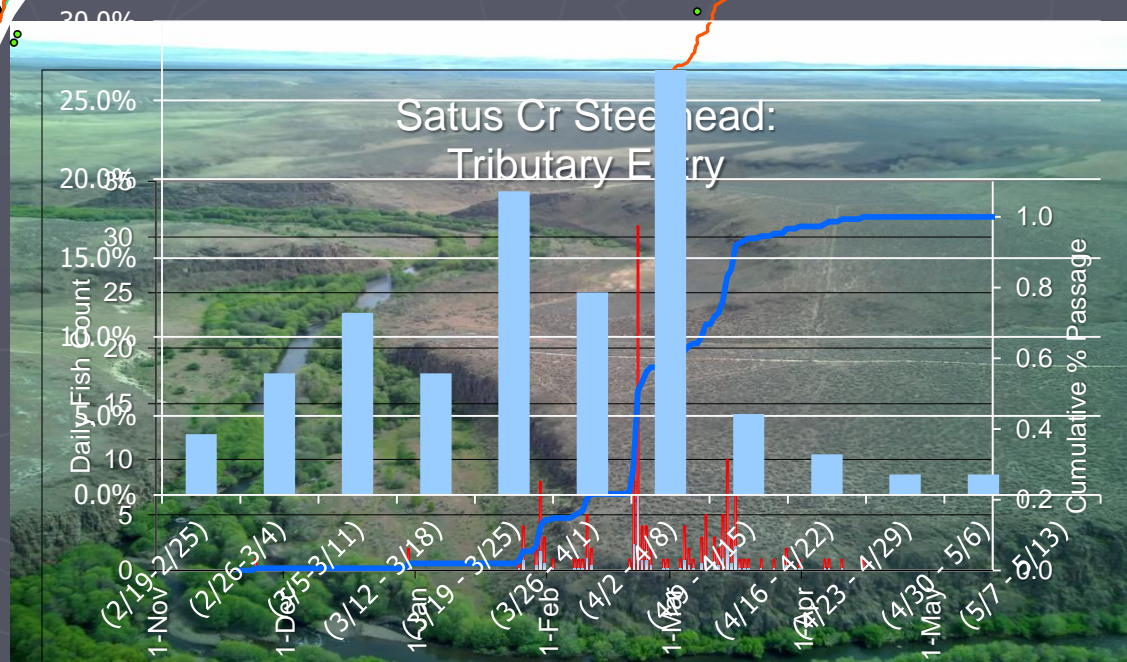


# Satus Cr



## Spawn Timing (N=78)

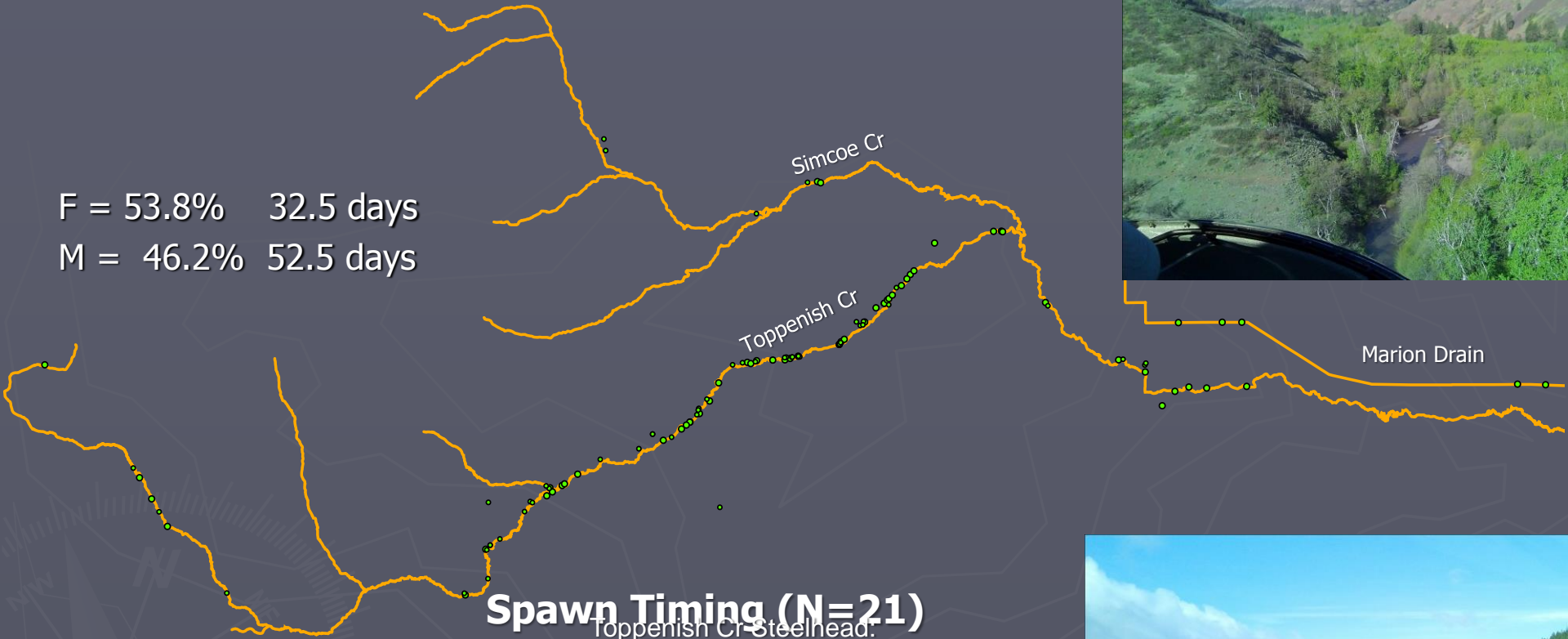
F = 67.2% 33 days  
 M = 32.8% 55 days



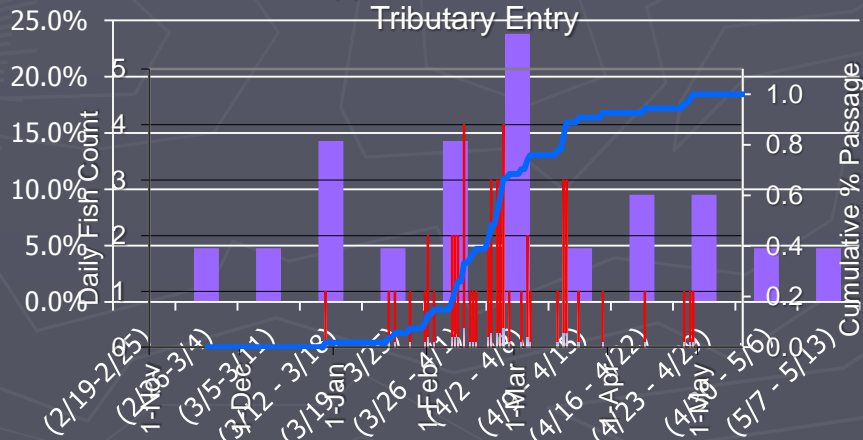


# Toppenish Cr

F = 53.8% 32.5 days  
 M = 46.2% 52.5 days



## Spawn Timing (N=21)

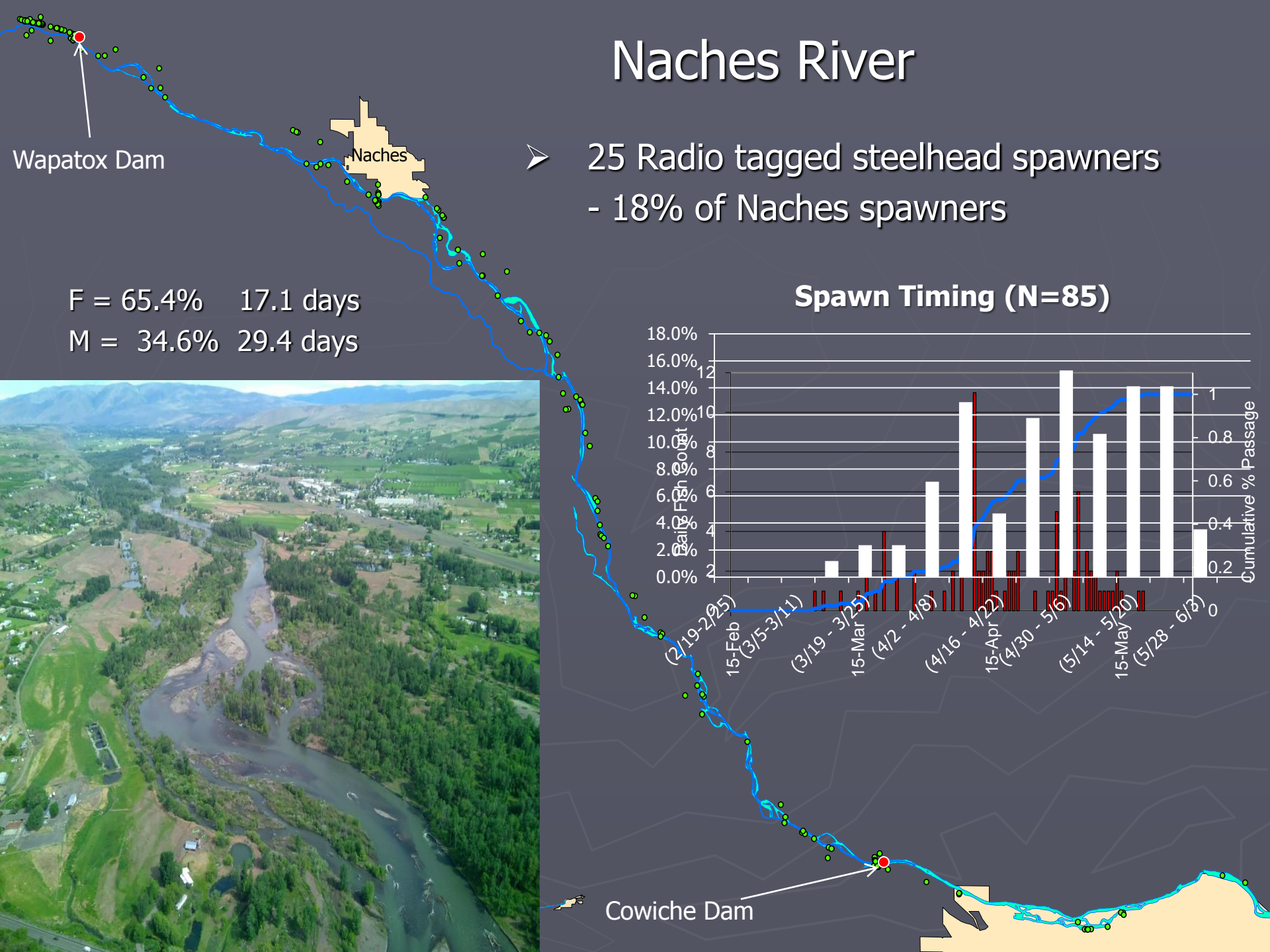
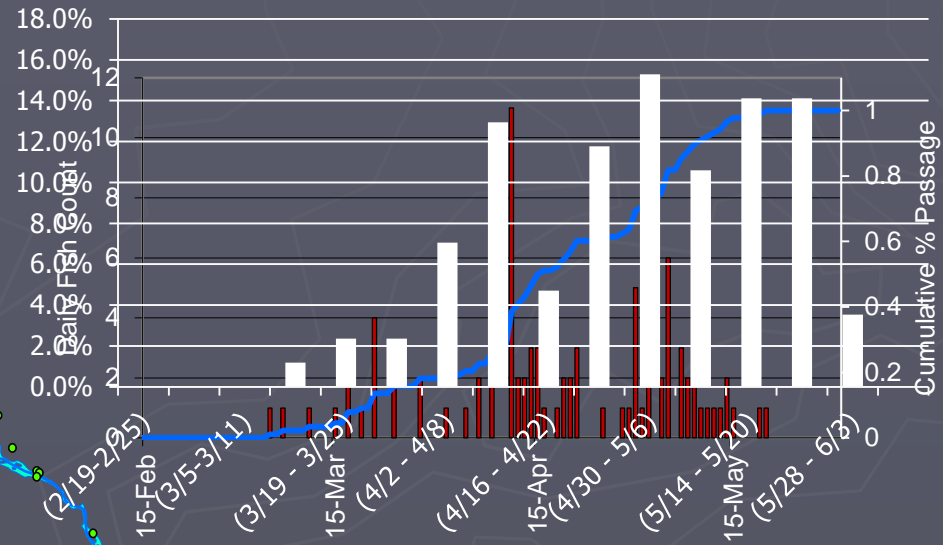


# Naches River

➤ 25 Radio tagged steelhead spawners  
- 18% of Naches spawners

F = 65.4% 17.1 days  
M = 34.6% 29.4 days

## Spawn Timing (N=85)



Cowiche Dam



# Yakima Mainstem & Wenas Cr

## Yakima Mainstem (Below Roza Dam)

- 3-4 fish spawned below Roza Dam

F = 73.9% 25.6 days

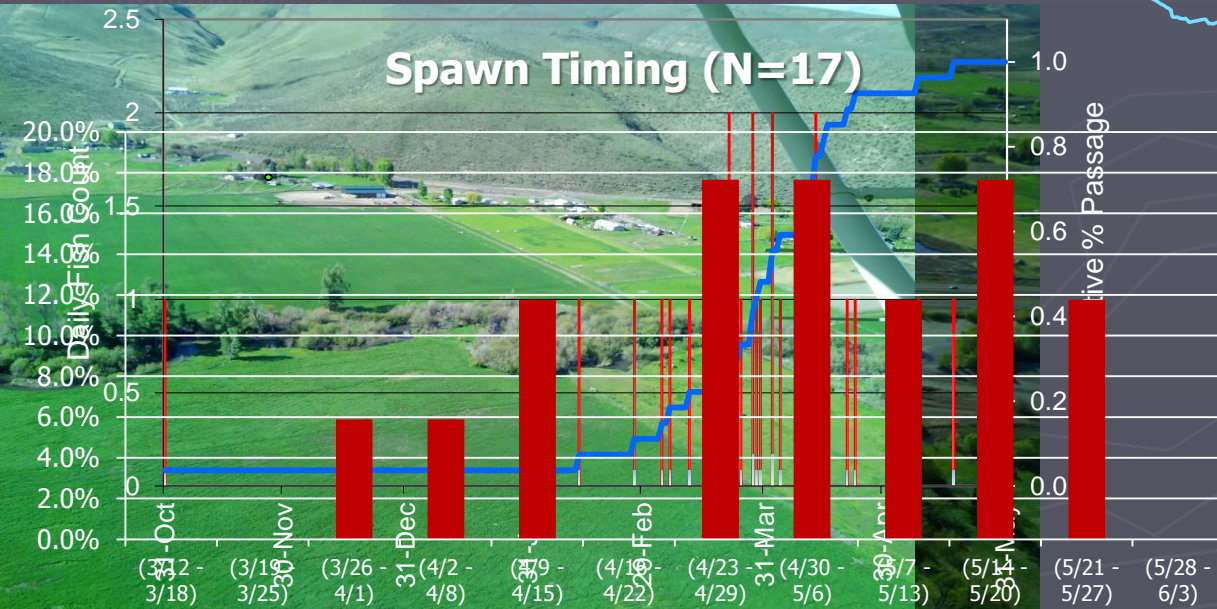
M = 26.1% 62.7 days

Roza Dam

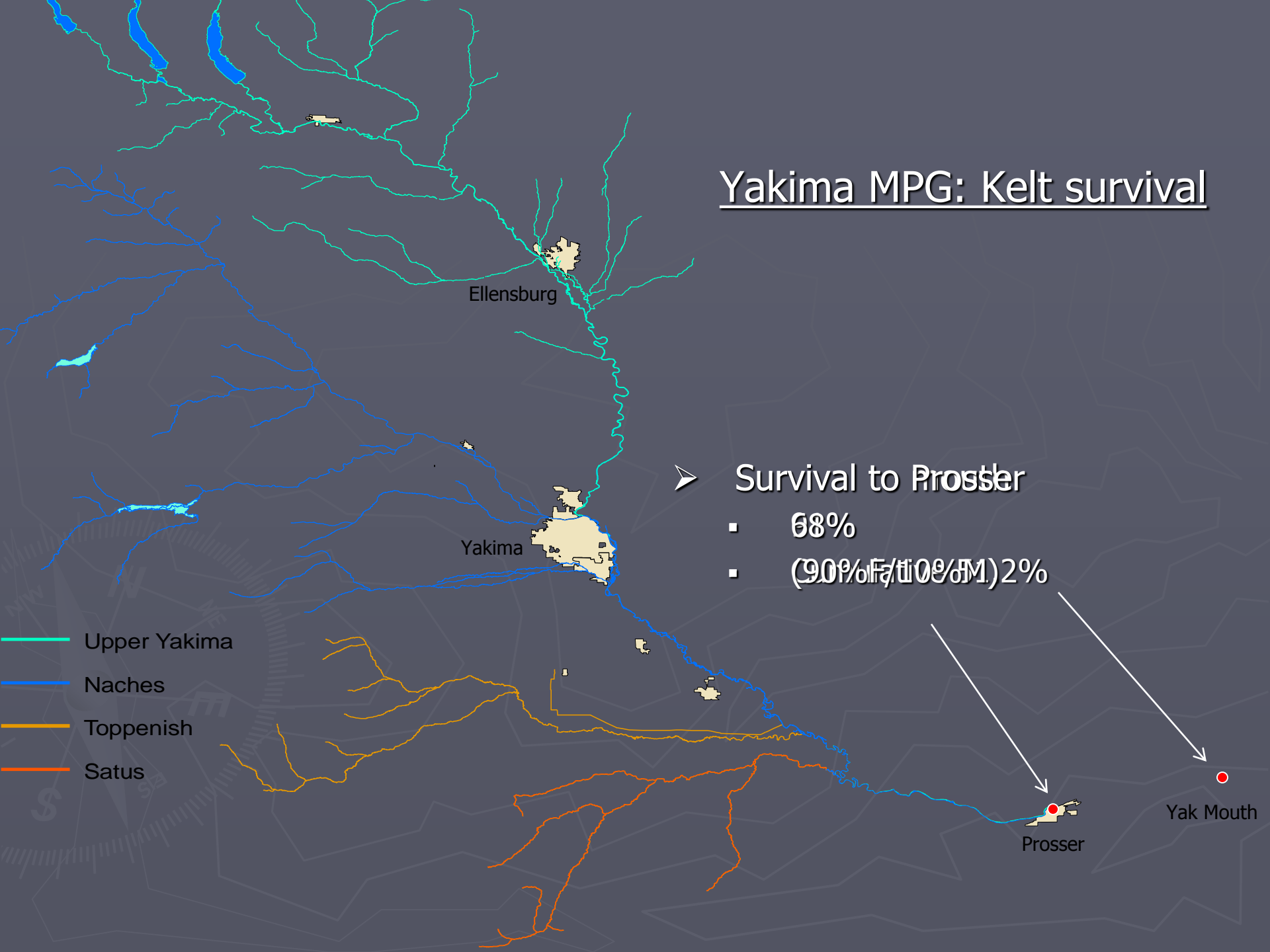
## Wenas Cr

- 3 fish detected

Upper Yak Run timing:  
To Roza Dam



# Yakima MPG: Kelt survival



## ➤ Survival to Prosser

- 68%
- (90% of F / 10% of M) 2%

- Upper Yakima
- Naches
- Toppenish
- Satus

Prosser

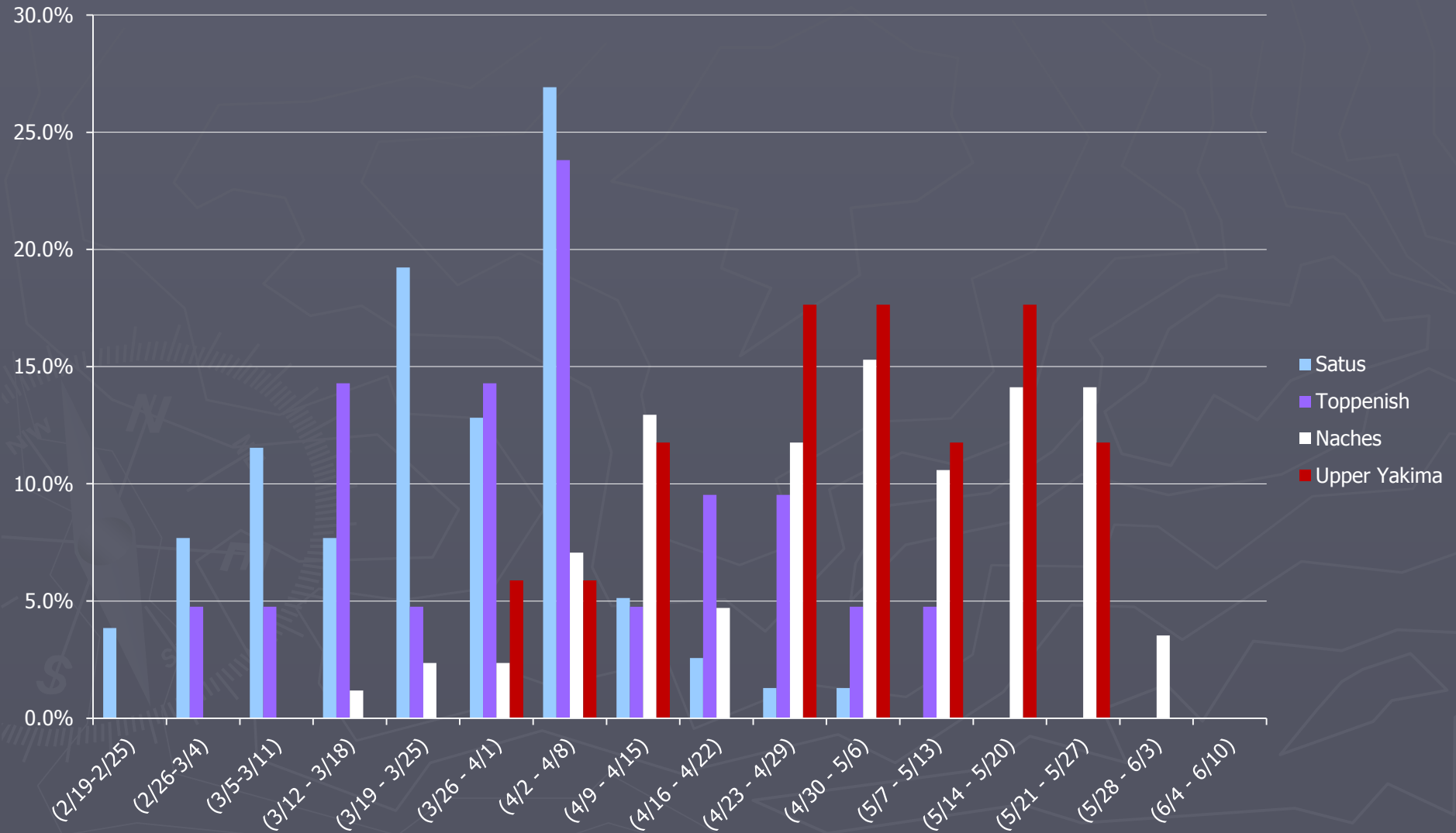
Yak Mouth



That's all Folks!

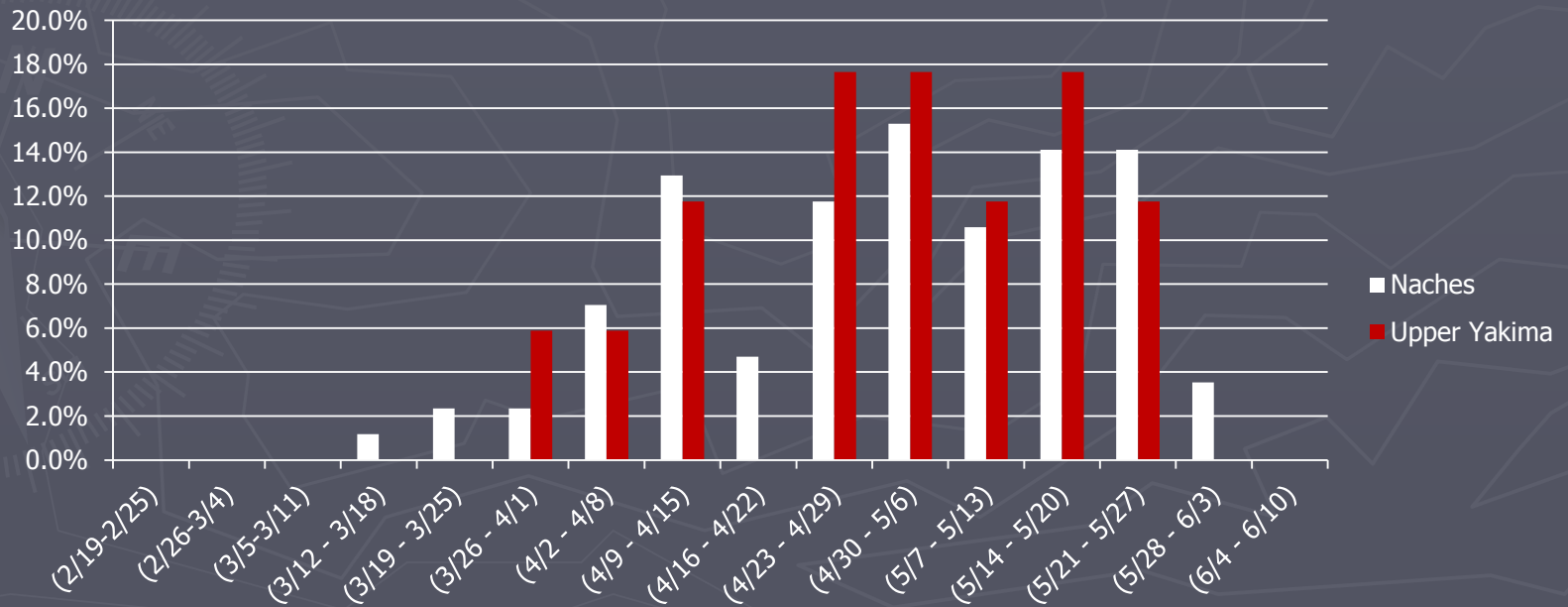
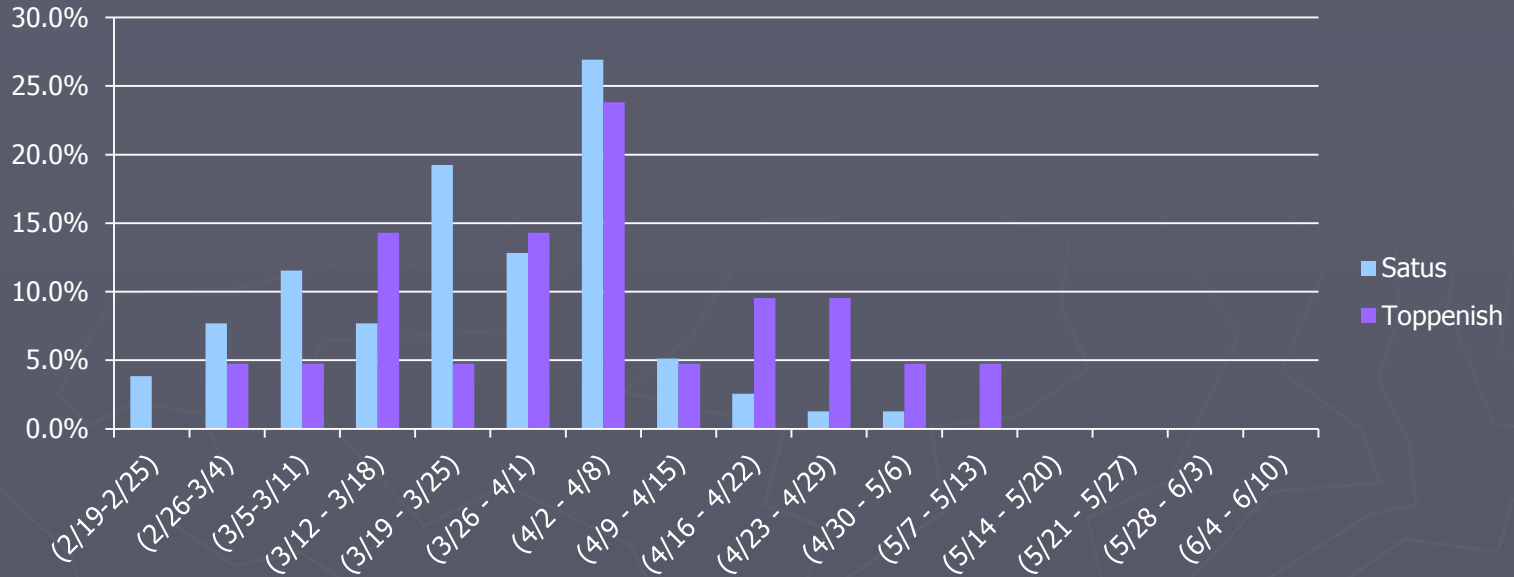


# Yakima Steelhead: Spawn Timing





# Spawn Timing



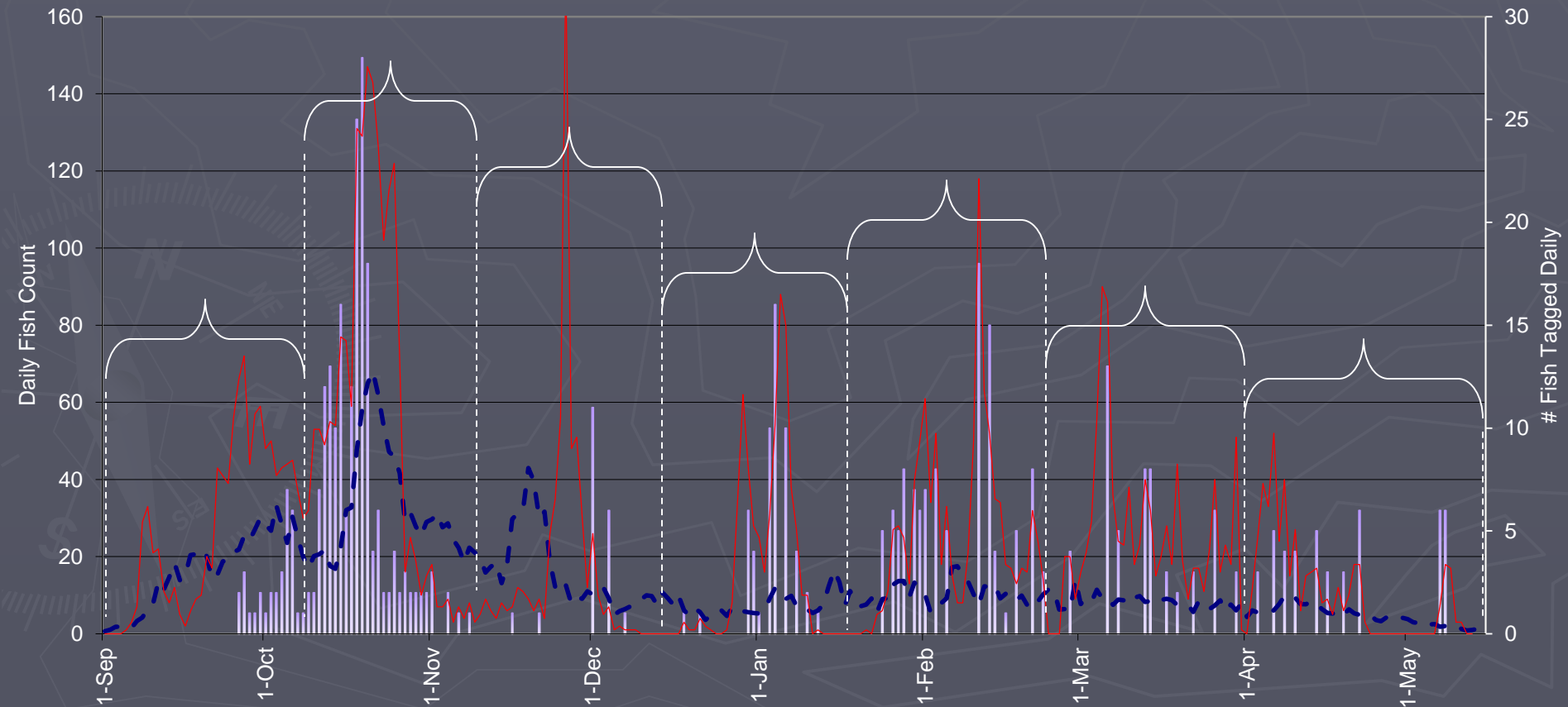
# Partitioning of Run-Timing & Sampling at Prosser Dam

-Improved Method for Population Expansion Estimates

-Differential run-timing between populations

-Under/Over sampling effort for stratified periods

Yakima Steelhead Run-Timing at Prosser Dam & Tagging effort





# Cumulative Passage: Prosser Dam

